

A10s Pro

Receiving Card



Specifications

Change History

| Document Version | Release Date | Description |
|------------------|--------------|--|
| V1.3.0 | 2024-08-20 | <ul style="list-style-type: none">• Updated the product introduction.• Updated the description for the Mapping feature.• Updated the current and power consumption.• Updated the production feature descriptions. |
| V1.2.2 | 2024-06-07 | <ul style="list-style-type: none">• Added descriptions for NCP.• Updated descriptions for load capacity.• Updated the feature name for thermal compensation.• Updated the dimensions diagram.• Removed individual gamma adjustment for RGB, firmware program readback, and configuration parameter readback from product features. |
| V1.2.1 | 2023-12-21 | <ul style="list-style-type: none">• Added thermal compensation 3.0.• Updated product feature descriptions. |
| V1.2.0 | 2023-07-19 | <ul style="list-style-type: none">• Added the features of display mode switching, brightness overdrive, and seam correction.• Removed current dimming from product features. |
| V1.1.4 | 2022-12-27 | <ul style="list-style-type: none">• Added current dimming to product features.• Updated the dimensions diagram.• Updated the current and power consumption.• Updated the packing box dimensions. |

Introduction

The A10s Pro is a high-end full-featured small receiving card developed by NovaStar Tech Co., Ltd. (hereinafter referred to as NovaStar). For 8bit and 10bit video sources and PWM driver ICs, a single A10s Pro supports resolutions up to 512×512@60Hz. For 12bit video sources, a single A10s Pro supports resolutions up to 512×256@60Hz.

This receiving card supports the exclusive Adaptive Thermal Compensation, Dynamic Booster, Full-Grayscale Calibration, and Image Booster technologies of NovaStar. With other various functions, such as Multi-Mode, Brightness Overdrive, Frame Rate Adaptive 3.0, Shutter Fit, HDR,

Pixel Level Brightness and Chroma Calibration, Quick Adjustment of Dark or Bright Lines, Low Latency, 3D, 90° Image Rotation, and Free Image Rotation, this receiving card can greatly improve the brightness, grayscale and color performance from every aspect, offering users an ultimate visual experience with a uniform, smooth and lifelike image. The product supports the usage of NCP files, enabling users to conveniently and swiftly carry out tasks such as displaying content on the cabinets, upgrading firmware, and optimizing image quality.

The A10s Pro uses high-density connectors for communication to limit the effects of dust and vibration, resulting in high stability. It supports up to 32 groups of parallel RGB data or 64 groups of serial data (expandable to 128 groups of serial data). Its reserved pins allow for custom functions of users. Thanks to its EMC Class B compliant hardware design, the A10s Pro has improved electromagnetic compatibility and is suitable for various on-site setups that have high requirements.

Certifications

RoHS, EMC Class B

If the product does not have the relevant certifications required by the countries or regions where it is to be sold, please contact NovaStar to confirm or address the problem.

Otherwise, the customer shall be responsible for the legal risks caused or NovaStar has the right to claim compensation.

Features

Improvements to Display Effect

- Adaptive Thermal Compensation

Dynamically adjust the thermal compensation coefficients of the screen to address the issue of color cast caused by uneven heat dissipation across the screen.

- Dynamic Booster

Real-time analysis and dynamic adjustment are made to each frame to significantly improve the display contrast and image details for better visual experience, and effectively control and lower the display power consumption, extending the service life of the LED screen.

- Full-Grayscale Calibration

Work with NovaStar's high-precision calibration system and the C3200 scientific grade camera to generate unique calibration coefficients for each grayscale, ensuring uniformity of each grayscale and dramatically improving the image quality.

- Image Booster (Effects depend on driver IC)
 - Color Management: Support standard (Rec.709 / DCI-P3 / Rec.2020) and custom color gamuts, enabling more precise colors on the screen.
 - Precise Grayscale: Individually correct the 65,536 levels of grayscale (16bit) of the driver IC to fix the display problems at low grayscale conditions, such as brightness spikes, brightness dips, color cast and mottling. This function can also better assist other display technologies, such as 22bit+ and individual gamma adjustment for RGB, allowing for a smoother and uniform image.
 - 22bit+: Improve the LED screen grayscale by 64 times to avoid grayscale loss due to low brightness and allow for a smoother image with more details in dark areas.
- Multi-Mode

Apply different modes based on different display scenarios. This ensures that LED screens are able to achieve optimal display quality in various scenarios.
- Brightness Overdrive

Enhance the maximum brightness of the screen by balancing the uniformity, thus increasing the dynamic range and improving image contrast.
- Frame Rate Adaptive 3.0

Adjust the receiving card parameters in real time according to the input frame rate, so that the display effect at different frame rates (23 Hz to 240 Hz) is the best.
- Shutter Fit

Automatically adjust the driver IC parameters according to the camera shutter angle to fix problems of black lines, grayscale addition, and grayscale loss during camera shooting in xR scenarios.
- HDR
 - Support HDR10 and comply with the SMPTE ST 2084 and SMPTE ST 2086 standards.
 - Support HLG.
- Pixel Level Brightness and Chroma Calibration

Work with NovaStar's high-precision calibration system to calibrate the brightness and chroma of each pixel, effectively eliminating differences and enabling high consistency for both brightness and chroma.
- Quick Adjustment of Dark or Bright Lines

The different brightness of seams caused by splicing of modules or cabinets can be corrected to improve the visual experience. The correction is easy and takes effect immediately.

- Low Latency

The latency of video source on the receiving card end can be reduced to 1 frame (only when using modules with driver IC with built-in RAM).
- 3D

Work with the controller that supports 3D function to enable 3D output.
- 90° Image Rotation

The display image can be rotated in multiples of 90° (0°/90°/180°/270°).
- Free Image Rotation

Work with SmartLCT and the MCTRL R5 LED display controller to support image rotation at any angle.

Improvements to Maintainability

- Calibration Coefficient Management

The calibration coefficients can be uploaded very fast, read back, and saved to hardware.
- Automatic Module Calibration

After a new module with flash memory is installed to replace the old one, the calibration coefficients stored in the flash memory can be automatically uploaded to the receiving card when it is powered on, which ensures unchanged uniform display brightness and chroma.
- Module Flash Management

For modules with flash memory, the information stored in the memory can be managed. The calibration coefficients and module ID can be stored and read back.
- Quick Uploading of Calibration Coefficients

Upload the calibration coefficients quickly to the receiving cards to improve efficiency.
- One-click to Apply Calibration Coefficients in Module Flash

For modules with flash memory, when the Ethernet cable is disconnected, users can hold down the self-test button on the cabinet to upload the calibration coefficients in the memory of the module to the receiving card.
- Mapping 1.1

The cabinets can display the controller number, receiving card number, and Ethernet port information, allowing users to easily obtain the locations and connection topology of receiving cards.
- Settings of a Stored Image in the Receiving Card

The image displayed during startup, or displayed when the Ethernet cable is disconnected or there is no video signal can be customized.

- Temperature and Voltage Monitoring

Real-time monitoring of the temperature and voltage of the receiving card, without the need for other external devices.

- Bit Error Detection

Real-time monitoring of the communication of the Ethernet port on the receiving card. It records the number of error data packets, which helps users identify faults and troubleshoot network communication issues.

- Status Detection of Dual Power Supplies

When two power supplies are used, their working status can be detected.

- LVDS Transmission (dedicated firmware required)

Low-voltage differential signaling (LVDS) transmission is used to reduce the number of data cables from the hub board to module, increasing the transmission distance and improving the signal transmission quality.

Improvements to Reliability

- Dual Card Backup and Status Monitoring

In an application requiring high reliability, two receiving cards can be mounted onto a single hub board for backup. When the primary card fails, the backup card can serve immediately to ensure uninterrupted operation of the display.

The working status of the primary and backup receiving cards can be monitored in real-time.

- Loop Backup

The receiving card and controller form a loop via the primary and backup line connections. When a fault occurs at a location of the lines, the screen can still display the image normally.

- Dual Backup of Configuration Parameters

The receiving card configuration parameters are stored in the application area and factory area of the receiving card at the same time. Users usually use the configuration parameters in the application area. If necessary, users can restore the configuration parameters in the factory area to the application area.

- Dual Program Backup

Two copies of firmware program are stored in the receiving card at the factory to avoid the problem that the receiving card may get stuck abnormally during program update.

- Dual Backup of Calibration Coefficients

Brightness and chroma calibration coefficients are stored in the application area and factory area of the receiving card at the same time. Users usually use the calibration coefficients in the application area. If necessary, users can restore the calibration coefficients in the factory area to the application area.

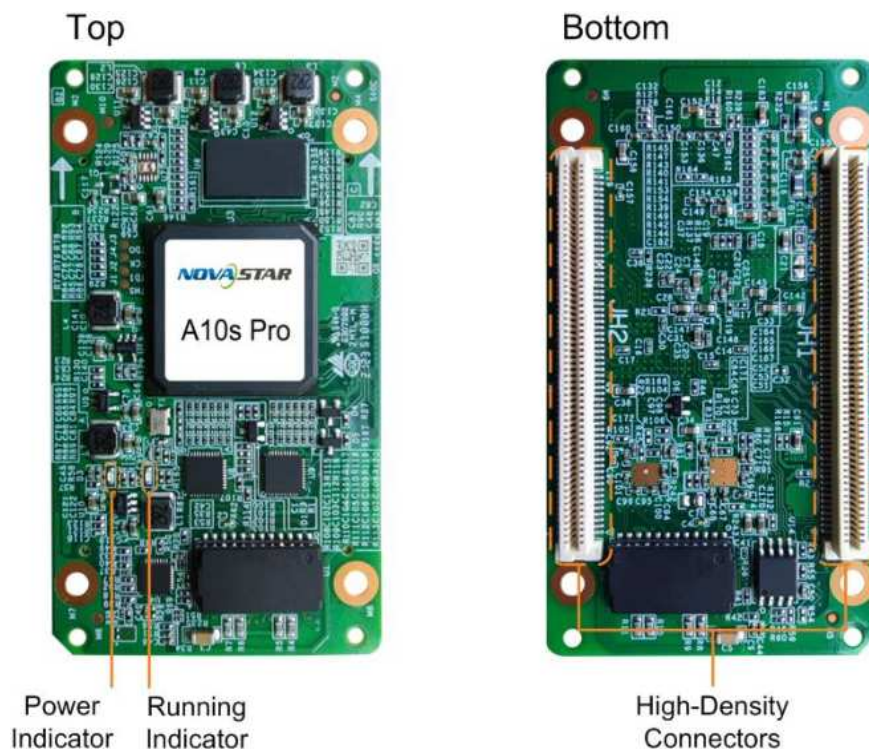
- One-click Firmware Program Learning

The cabinet firmware program and configuration file can be copied to other cabinets with one click to help quickly complete cabinet configuration.

 Note

Full grayscale calibration is supported by the following devices: MX series, MCTRL4K, MCTRL1600, MCTRL600, H15, H9, H5, H2, and V1260.

Appearance



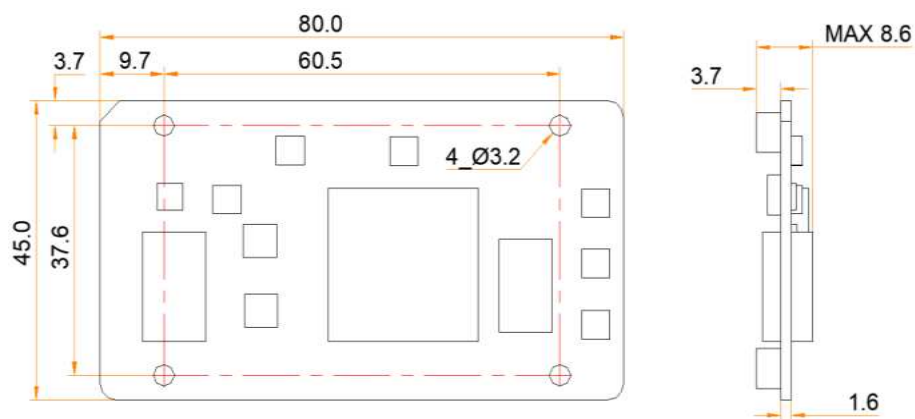
All product pictures shown in this document are for illustration purpose only. Actual product may vary.

Indicator

| Indicators | Color | Status | Description |
|-------------------|-------|-----------------------------|---|
| Running indicator | Green | Flashing once every 1s | The receiving card is functioning normally. Ethernet cable connection is normal, and video source input is available. |
| | | Flashing once every 3s | Ethernet cable connection is abnormal. |
| | | Flashing 3 times every 0.5s | Ethernet cable connection is normal, but video source input is unavailable. |
| | | Flashing once every 0.2s | The receiving card failed to load the program in the application area and is now using the backup program. |
| | | Flashing 8 times every 0.5s | A redundancy switchover occurred on the Ethernet port and the loop backup has taken effect. |
| Power indicator | Red | Always on | The power input is normal. |

Dimensions

The board thickness is not greater than 2.0 mm, and the total thickness (board thickness + thickness of components on the top and bottom sides) is not greater than 8.6 mm. Ground connection (GND) is enabled for mounting holes.



Tolerance: ± 0.3 Unit: mm

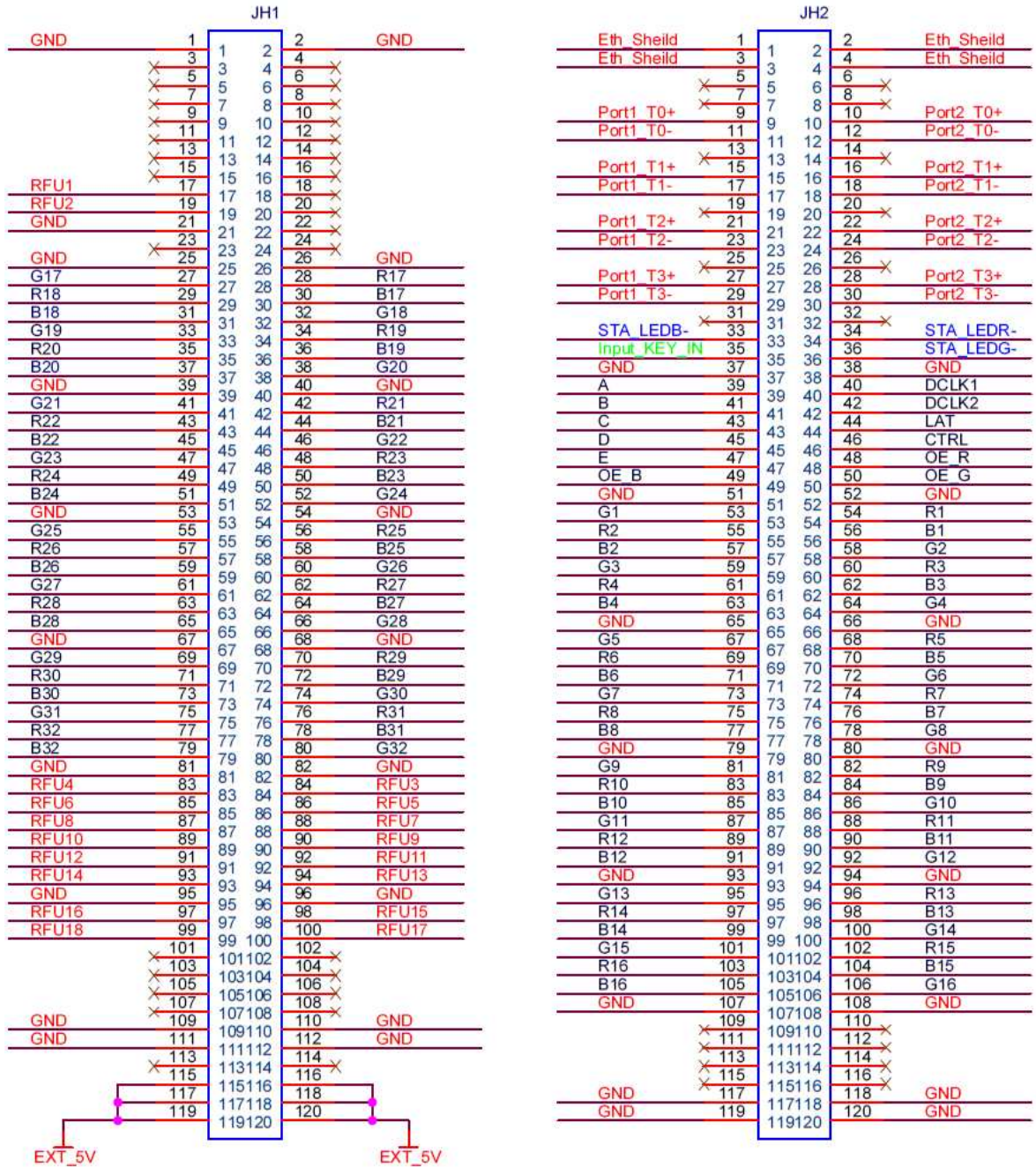
 Note

The distance between outer surfaces of the product and hub boards after their high-density connectors fit together is 5.0 mm. A 5.0 mm copper pillar is recommended.

To make molds or trepan mounting holes, please contact NovaStar for a higher-precision structural drawing.

Pins

32 Groups of Parallel RGB Data



| JH1 | | | | | |
|-----|-----|---|---|-----|---|
| / | GND | 1 | 2 | GND | / |
| / | NC | 3 | 4 | NC | / |
| / | NC | 5 | 6 | NC | / |

| JH1 | | | | | |
|-----|------|----|----|-----|---|
| / | NC | 7 | 8 | NC | / |
| / | NC | 9 | 10 | NC | / |
| / | NC | 11 | 12 | NC | / |
| / | NC | 13 | 14 | NC | / |
| / | NC | 15 | 16 | NC | / |
| / | RFU1 | 17 | 18 | NC | / |
| / | RFU2 | 19 | 20 | NC | / |
| / | GND | 21 | 22 | NC | / |
| / | NC | 23 | 24 | NC | / |
| / | GND | 25 | 26 | GND | / |
| / | G17 | 27 | 28 | R17 | / |
| / | R18 | 29 | 30 | B17 | / |
| / | B18 | 31 | 32 | G18 | / |
| / | G19 | 33 | 34 | R19 | / |
| / | R20 | 35 | 36 | B19 | / |
| / | B20 | 37 | 38 | G20 | / |
| / | GND | 39 | 40 | GND | / |
| / | G21 | 41 | 42 | R21 | / |
| / | R22 | 43 | 44 | B21 | / |
| / | B22 | 45 | 46 | G22 | / |
| / | G23 | 47 | 48 | R23 | / |
| / | R24 | 49 | 50 | B23 | / |
| / | B24 | 51 | 52 | G24 | / |
| / | GND | 53 | 54 | GND | / |
| / | G25 | 55 | 56 | R25 | / |
| / | R26 | 57 | 58 | B25 | / |

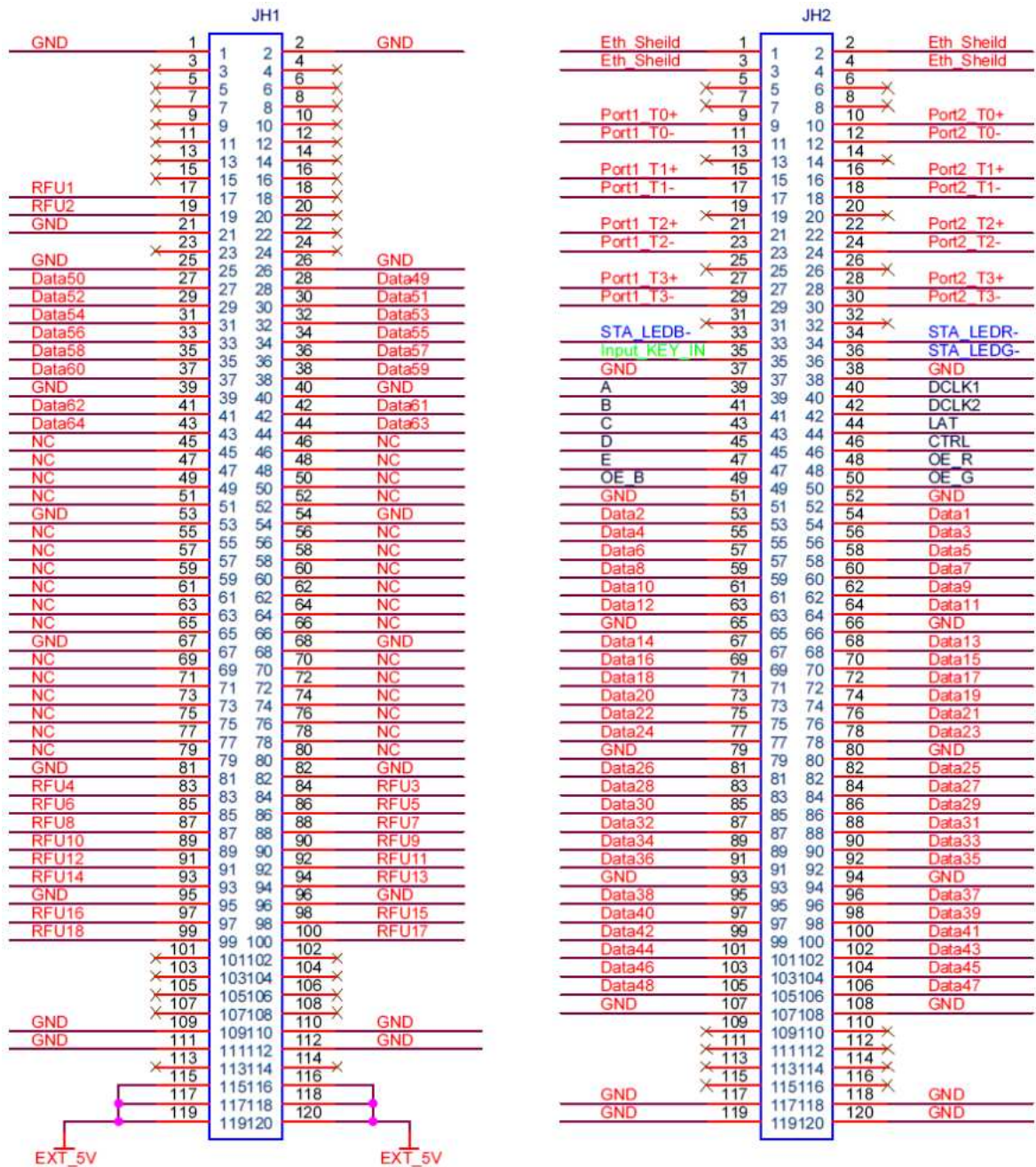
| JH1 | | | | | |
|-----|-------|-----|-----|-------|---|
| / | B26 | 59 | 60 | G26 | / |
| / | G27 | 61 | 62 | R27 | / |
| / | R28 | 63 | 64 | B27 | / |
| / | B28 | 65 | 66 | G28 | / |
| / | GND | 67 | 68 | GND | / |
| / | G29 | 69 | 70 | R29 | / |
| / | R30 | 71 | 72 | B29 | / |
| / | B30 | 73 | 74 | G30 | / |
| / | G31 | 75 | 76 | R31 | / |
| / | R32 | 77 | 78 | B31 | / |
| / | B32 | 79 | 80 | G32 | / |
| / | GND | 81 | 82 | GND | / |
| / | RFU4 | 83 | 84 | RFU3 | / |
| / | RFU6 | 85 | 86 | RFU5 | / |
| / | RFU8 | 87 | 88 | RFU7 | / |
| / | RFU10 | 89 | 90 | RFU9 | / |
| / | RFU12 | 91 | 92 | RFU11 | / |
| / | RFU14 | 93 | 94 | RFU13 | / |
| / | GND | 95 | 96 | GND | / |
| / | RFU16 | 97 | 98 | RFU15 | / |
| / | RFU18 | 99 | 100 | RFU17 | / |
| / | NC | 101 | 102 | NC | / |
| / | NC | 103 | 104 | NC | / |
| / | NC | 105 | 106 | NC | / |
| / | NC | 107 | 108 | NC | / |
| / | GND | 109 | 110 | GND | / |

| JH1 | | | | | |
|--------------------------|--------------|-----|-----------|------------|---|
| / | GND | 111 | 112 | GND | / |
| / | NC | 113 | 114 | NC | / |
| / | EXT_5V | 115 | 116 | EXT_5V | / |
| / | EXT_5V | 117 | 118 | EXT_5V | / |
| / | EXT_5V | 119 | 120 | EXT_5V | / |
| JH2 | | | | | |
| Chassis ground | Eth_Sheild | 1 | 2 | Eth_Sheild | Chassis ground |
| Chassis ground | Eth_Sheild | 3 | 4 | Eth_Sheild | Chassis ground |
| / | NC | 5 | 6 | NC | / |
| / | NC | 7 | 8 | NC | / |
| Gigabit Ethernet port | Port1_T0+ | 9 | 10 | Port2_T0+ | Gigabit Ethernet port |
| | Port1_T0- | 11 | 12 | Port2_T0- | |
| | NC | 13 | 14 | NC | |
| | Port1_T1+ | 15 | 16 | Port2_T1+ | |
| | Port1_T1- | 17 | 18 | Port2_T1- | |
| | NC | 19 | 20 | NC | |
| | Port1_T2+ | 21 | 22 | Port2_T2+ | |
| | Port1_T2- | 23 | 24 | Port2_T2- | |
| | NC | 25 | 26 | NC | |
| | Port1_T3+ | 27 | 28 | Port2_T3+ | |
| Port1_T3- | 29 | 30 | Port2_T3- | | |
| / | NC | 31 | 32 | NC | / |
| Tri-color LED (Reserved) | STA_LEDB- | 33 | 34 | STA_LEDR- | Tri-color LED (Reserved) |
| Test button | Input_KEY_IN | 35 | 36 | STA_LEDG- | Running indicator (active low) Tri-color LED |

| JH1 | | | | | |
|-----------------------|------|----|----|-------|--------------------------|
| | | | | | (Reserved) |
| / | GND | 37 | 38 | GND | / |
| Line decoding signal | A | 39 | 40 | DCLK1 | Shift clock output 1 |
| Line decoding signal | B | 41 | 42 | DCLK2 | Shift clock output 2 |
| Line decoding signal | C | 43 | 44 | LAT | Latch signal output |
| Line decoding signal | D | 45 | 46 | CTRL | Afterglow control signal |
| Line decoding signal | E | 47 | 48 | OE_R | Display enable signal |
| Display enable signal | OE_B | 49 | 50 | OE_G | Display enable signal |
| / | GND | 51 | 52 | GND | / |
| / | G1 | 53 | 54 | R1 | / |
| / | R2 | 55 | 56 | B1 | / |
| / | B2 | 57 | 58 | G2 | / |
| / | G3 | 59 | 60 | R3 | / |
| / | R4 | 61 | 62 | B3 | / |
| / | B4 | 63 | 64 | G4 | / |
| / | GND | 65 | 66 | GND | / |
| / | G5 | 67 | 68 | R5 | / |
| / | R6 | 69 | 70 | B5 | / |
| / | B6 | 71 | 72 | G6 | / |
| / | G7 | 73 | 74 | R7 | / |
| / | R8 | 75 | 76 | B7 | / |
| / | B8 | 77 | 78 | G8 | / |

| JH1 | | | | | |
|-----|-----|-----|-----|-----|---|
| / | GND | 79 | 80 | GND | / |
| / | G9 | 81 | 82 | R9 | / |
| / | R10 | 83 | 84 | B9 | / |
| / | B10 | 85 | 86 | G10 | / |
| / | G11 | 87 | 88 | R11 | / |
| / | R12 | 89 | 90 | B11 | / |
| / | B12 | 91 | 92 | G12 | / |
| / | GND | 93 | 94 | GND | / |
| / | G13 | 95 | 96 | R13 | / |
| / | R14 | 97 | 98 | B13 | / |
| / | B14 | 99 | 100 | G14 | / |
| / | G15 | 101 | 102 | R15 | / |
| / | R16 | 103 | 104 | B15 | / |
| / | B16 | 105 | 106 | G16 | / |
| / | GND | 107 | 108 | GND | / |
| / | NC | 109 | 110 | NC | / |
| / | NC | 111 | 112 | NC | / |
| / | NC | 113 | 114 | NC | / |
| / | NC | 115 | 116 | NC | / |
| / | GND | 117 | 118 | GND | / |
| / | GND | 119 | 120 | GND | / |

64 Groups of Serial Data



| JH1 | | | | | |
|-----|-----|---|----|-----|---|
| / | GND | 1 | 2 | GND | / |
| / | NC | 3 | 4 | NC | / |
| / | NC | 5 | 6 | NC | / |
| / | NC | 7 | 8 | NC | / |
| / | NC | 9 | 10 | NC | / |

| JH1 | | | | | |
|-----|--------|----|----|--------|---|
| / | NC | 11 | 12 | NC | / |
| / | NC | 13 | 14 | NC | / |
| / | NC | 15 | 16 | NC | / |
| / | RFU1 | 17 | 18 | NC | / |
| / | RFU2 | 19 | 20 | NC | / |
| / | GND | 21 | 22 | NC | / |
| / | NC | 23 | 24 | NC | / |
| / | GND | 25 | 26 | GND | / |
| / | Data50 | 27 | 28 | Data49 | / |
| / | Data52 | 29 | 30 | Data51 | / |
| / | Data54 | 31 | 32 | Data53 | / |
| / | Data56 | 33 | 34 | Data55 | / |
| / | Data58 | 35 | 36 | Data57 | / |
| / | Data60 | 37 | 38 | Data59 | / |
| / | GND | 39 | 40 | GND | / |
| / | Data62 | 41 | 42 | Data61 | / |
| / | Data64 | 43 | 44 | Data63 | / |
| / | NC | 45 | 46 | NC | / |
| / | NC | 47 | 48 | NC | / |
| / | NC | 49 | 50 | NC | / |
| / | NC | 51 | 52 | NC | / |
| / | GND | 53 | 54 | GND | / |
| / | NC | 55 | 56 | NC | / |
| / | NC | 57 | 58 | NC | / |
| / | NC | 59 | 60 | NC | / |
| / | NC | 61 | 62 | NC | / |

| JH1 | | | | | |
|-----|-------|-----|-----|-------|---|
| / | NC | 63 | 64 | NC | / |
| / | NC | 65 | 66 | NC | / |
| / | GND | 67 | 68 | GND | / |
| / | NC | 69 | 70 | NC | / |
| / | NC | 71 | 72 | NC | / |
| / | NC | 73 | 74 | NC | / |
| / | NC | 75 | 76 | NC | / |
| / | NC | 77 | 78 | NC | / |
| / | NC | 79 | 80 | NC | / |
| / | GND | 81 | 82 | GND | / |
| / | RFU4 | 83 | 84 | RFU3 | / |
| / | RFU6 | 85 | 86 | RFU5 | / |
| / | RFU8 | 87 | 88 | RFU7 | / |
| / | RFU10 | 89 | 90 | RFU9 | / |
| / | RFU12 | 91 | 92 | RFU11 | / |
| / | RFU14 | 93 | 94 | RFU13 | / |
| / | GND | 95 | 96 | GND | / |
| / | RFU16 | 97 | 98 | RFU15 | / |
| / | RFU18 | 99 | 100 | RFU17 | / |
| / | NC | 101 | 102 | NC | / |
| / | NC | 103 | 104 | NC | / |
| / | NC | 105 | 106 | NC | / |
| / | NC | 107 | 108 | NC | / |
| / | GND | 109 | 110 | GND | / |
| / | GND | 111 | 112 | GND | / |
| / | NC | 113 | 114 | NC | / |

| JH1 | | | | | |
|--------------------------|--------------|-----|-----------|------------|--|
| / | EXT_5V | 115 | 116 | EXT_5V | / |
| / | EXT_5V | 117 | 118 | EXT_5V | / |
| / | EXT_5V | 119 | 120 | EXT_5V | / |
| JH2 | | | | | |
| Chassis ground | Eth_Sheild | 1 | 2 | Eth_Sheild | Chassis ground |
| Chassis ground | Eth_Sheild | 3 | 4 | Eth_Sheild | Chassis ground |
| / | NC | 5 | 6 | NC | / |
| / | NC | 7 | 8 | NC | / |
| Gigabit Ethernet port | Port1_T0+ | 9 | 10 | Port2_T0+ | Gigabit Ethernet port |
| | Port1_T0- | 11 | 12 | Port2_T0- | |
| | NC | 13 | 14 | NC | |
| | Port1_T1+ | 15 | 16 | Port2_T1+ | |
| | Port1_T1- | 17 | 18 | Port2_T1- | |
| | NC | 19 | 20 | NC | |
| | Port1_T2+ | 21 | 22 | Port2_T2+ | |
| | Port1_T2- | 23 | 24 | Port2_T2- | |
| | NC | 25 | 26 | NC | |
| | Port1_T3+ | 27 | 28 | Port2_T3+ | |
| Port1_T3- | 29 | 30 | Port2_T3- | | |
| / | NC | 31 | 32 | NC | / |
| Tri-color LED (Reserved) | STA_LEDB- | 33 | 34 | STA_LEDR- | Tri-color LED (Reserved) |
| Test button | Input_KEY_IN | 35 | 36 | STA_LEDG- | Running indicator (active low) Tri-color LED (Reserved) |
| / | GND | 37 | 38 | GND | / |

| JH1 | | | | | |
|-----------------------|--------|----|----|--------|--------------------------|
| Line decoding signal | A | 39 | 40 | DCLK1 | Shift clock output 1 |
| Line decoding signal | B | 41 | 42 | DCLK2 | Shift clock output 2 |
| Line decoding signal | C | 43 | 44 | LAT | Latch signal output |
| Line decoding signal | D | 45 | 46 | CTRL | Afterglow control signal |
| Line decoding signal | E | 47 | 48 | OE_R | Display enable signal |
| Display enable signal | OE_B | 49 | 50 | OE_G | Display enable signal |
| / | GND | 51 | 52 | GND | / |
| / | Data2 | 53 | 54 | Data1 | / |
| / | Data4 | 55 | 56 | Data3 | / |
| / | Data6 | 57 | 58 | Data5 | / |
| / | Data8 | 59 | 60 | Data7 | / |
| / | Data10 | 61 | 62 | Data9 | / |
| / | Data12 | 63 | 64 | Data11 | / |
| / | GND | 65 | 66 | GND | / |
| / | Data14 | 67 | 68 | Data13 | / |
| / | Data16 | 69 | 70 | Data15 | / |
| / | Data18 | 71 | 72 | Data17 | / |
| / | Data20 | 73 | 74 | Data19 | / |
| / | Data22 | 75 | 76 | Data21 | / |
| / | Data24 | 77 | 78 | Data23 | / |
| / | GND | 79 | 80 | GND | / |
| / | Data26 | 81 | 82 | Data25 | / |

| JH1 | | | | | |
|-----|--------|-----|-----|--------|---|
| / | Data28 | 83 | 84 | Data27 | / |
| / | Data30 | 85 | 86 | Data29 | / |
| / | Data32 | 87 | 88 | Data31 | / |
| / | Data34 | 89 | 90 | Data33 | / |
| / | Data36 | 91 | 92 | Data35 | / |
| / | GND | 93 | 94 | GND | / |
| / | Data38 | 95 | 96 | Data37 | / |
| / | Data40 | 97 | 98 | Data39 | / |
| / | Data42 | 99 | 100 | Data41 | / |
| / | Data44 | 101 | 102 | Data43 | / |
| / | Data46 | 103 | 104 | Data45 | / |
| / | Data48 | 105 | 106 | Data47 | / |
| / | GND | 107 | 108 | GND | / |
| / | NC | 109 | 110 | NC | / |
| / | NC | 111 | 112 | NC | / |
| / | NC | 113 | 114 | NC | / |
| / | NC | 115 | 116 | NC | / |
| / | GND | 117 | 118 | GND | / |
| / | GND | 119 | 120 | GND | / |


Note

The recommended power input is 5.0 V.

OE_R, OE_G and OE_B are display enable signals. When RGB are not controlled separately, use OE_R. When the PWM chip is used, they are used as GCLK signals.

In the mode of 128 groups of serial data, Data65–Data128 are multiplexed into Data1–Data64, respectively.

Reference Design for Extended Functions

| Pins for Extended Functions | | | |
|-----------------------------|------------------------------|------------------------------|--------------------------------------|
| Pin | Recommended Module Flash Pin | Recommended Smart Module Pin | Pin |
| RFU4 | HUB_SPI_CLK | (Reserved) | Clock signal of serial pin |
| RFU6 | HUB_SPI_CS | Reserved | CS signal of serial pin |
| RFU8 | HUB_SPI_MOSI | / | Module flash data storage input |
| | / | HUB_UART_TX | Smart module TX signal |
| RFU10 | HUB_SPI_MISO | / | Module flash data storage output |
| | / | HUB_UART_RX | Smart module RX signal |
| RFU1 | Reserved | | A reserved pin for connection to MCU |
| RFU2 | Reserved | | A reserved pin for connection to MCU |
| RFU3 | HUB_CODE0 | | Module Flash BUS control pin |
| RFU5 | HUB_CODE1 | | |
| RFU7 | HUB_CODE2 | | |
| RFU9 | HUB_CODE3 | | |
| RFU11 | HUB_H164_CSD | | 74HC164 data signal |
| RFU12 | / | | / |
| RFU13 | HUB_H164_CLK | | 74HC164 clock signal |
| RFU14 | POWER_STA1 | | Dual power supply detection signal 1 |
| RFU15 | MS_DATA | | Dual card backup connection signal |
| RFU16 | POWER_STA2 | | Dual power supply detection signal 2 |

| Pins for Extended Functions | | |
|-----------------------------|-----------|------------------------------------|
| RFU17 | MS_ID | Dual card backup identifier signal |
| RFU18 | HUB_CODE4 | Flash control pin 5 |

 **Note**

The RFU8 and RFU10 are signal multiplex extension pins. Only one pin from either the Recommended Smart Module Pin or the Recommended Module Flash Pin can be selected at the same time.

Specifications

| | | |
|-------------------------|---|---|
| Maximum Resolution | 512×512@60Hz (For 8bit and 10bit video sources) | |
| | 512×256@60Hz (For 12bit video sources) | |
| Electrical Parameters | Input voltage | DC 3.8 V to 5.5 V |
| | Rated current | 0.8 A |
| | Rated power consumption | 4.0 W |
| Operating Environment | Temperature | -20°C to +70°C |
| | Humidity | 10% RH to 90% RH, non-condensing |
| Storage Environment | Temperature | -25°C to +125°C |
| | Humidity | 0% RH to 95% RH, non-condensing |
| Physical Specifications | Dimensions | 80.0 mm × 45.0 mm × 8.6 mm |
| | Net weight | 22.8 g Note: It is the weight of a single receiving card only. |
| Packing Information | Packing specifications | An antistatic bag and anti-collision foam are provided for each receiving card. Each packing box contains 40 receiving cards. |
| | Packing box dimensions | 381.0 mm × 123.0 mm × 196.0 mm |

 Note

The amount of current and power consumption may vary depending on various factors such as product settings, usage, and environment.

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